

diameter at its junction with the main trunk of the tree. Above the lowest tier of branches is a second tier composed of three large branches. All of the branches extend upward, spreading in the broad, open habit characteristic of the Torrey pine. Very few cones are to be observed on the tree. The trunk is like that of a massive oak. The diameter, breast-high, is five feet six inches, at ground level, eight feet; fourteen feet above the ground the lowest tier of branches diverges from the trunk (pl. 18, fig. 1).

This magnificent specimen is in the garden of the W. P. Fuller, Jr., estate at 245 El Cerrito, Hillsborough, San Mateo County, California. It is without doubt the finest specimen in the gardens of our bay district.

At Carpinteria, Santa Barbara County, there is another fine specimen which measures one hundred feet in height, more than one hundred feet in the diameter of the crown, and nearly five feet in diameter, breast-high.

Happy Hours, Menlo Park,
California, August, 1939.

SIX THISTLES RECENTLY INTRODUCED INTO TEXAS

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CENTAUREA MELITENSIS L. So far as known, the star thistle was first collected in Texas in Bexar County in 1934 by Mr. H. B. Parks. The writer first saw and collected it along the highway in Kerr County, five miles west of Comfort on May 24, 1935. Since then this species has spread rapidly to the south, west and north, apparently along highways only, as far as two hundred miles from the Kerr County locality. It is now abundant along the sides of many of the roads of the Edwards Plateau. Mr. Parks writes that it is quite abundant on roadsides as far east as central Gonzales County. This thistle is a native of Europe, but has become established in the Pacific States. It is reported also from Georgia and Alabama to Massachusetts, Missouri and westward.

CENTAUREA PICRIS Pall. (*C. repens* L.) On June 2, 1937, the writer received from Superintendent J. J. Bayles of Texas Substation No. 9 at Balmorhea, Reeves County, good specimens of this species, commonly known as Turkestan thistle, with the statements that this plant had become introduced into the irrigated alfalfa fields of that section, and that it might prove to be a troublesome weed. This Asiatic species is established locally in California, and has also been discovered in alfalfa fields in Montana.

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SILYBUM MARIANUM (L.) Gaertn. A strange thistle having large mottled and prickly leaves was noted on a ranch in southeastern Sutton County, March 16, 1938. The locality was revisited in August of the same year, at which time the plants had matured and died. A few achenes were salvaged, and the species was determined as *Silybum marianum* (L.) Gaertn., lady's thistle. Since its introduction locally two or three years ago, this species has increased its area until it occupies a small field located in a large pasture, but has spread only a few feet into the surrounding pasture land. Apparently, therefore, it will not infest the range, but, as it is not a forage plant, should be eradicated, or prevented from spreading to other cultivated fields. Where controlled, this thistle may be a desirable ornamental plant. This species is a native of southern Europe, and has been introduced locally from Alabama to Ontario, and westward to the Pacific Coast. This seems to be the first report of its occurrence in Texas.

On May 18, 1939, two other introduced thistles were collected on this same ranch, both growing with *Silybum marianum*, but more abundantly in a similar small field, half a mile east of the first, located in the same large pasture. These thistles are supposed to have been introduced through a shipment of hay coming from California.

CARDUUS PYCNOCEPHALUS L. The first of the two species, slender thistle, is a native of southern Europe and central Asia, and has been found growing at localities in New York, New Jersey, and Pennsylvania, always as a mere casual of industrial areas. This thistle has relatively small heads which are clustered at the ends of winged branches.

CARDUUS NUTANS L. Musk thistle, the second species is characterized by large solitary heads of purple flowers which are markedly fragrant. Like *C. pycnocephalus*, this species also is a native of Eurasia. It has been found in this country in waste places and about seaports from Pennsylvania to New Brunswick. This seems to be the first report of its occurrence in Texas.

ONOPORDUM ACANTHIUM L. A dense infestation of a rather large thistle, mostly six feet or more high, uniformly white-tomentose with stems and branches provided with spiny-margined wings, was visited in Tarrant County, May 21, 1939. This species, cotton thistle, is a native of Eurasia, but has been introduced locally from Alabama to Michigan, New Jersey, Ontario and New Brunswick. This report appears to be the first of its occurrence in Texas. This plant has spread from the west side of the stock yards at Fort Worth to a distance of about two miles, and gives evidence of being adapted to the soils and climate of that vicinity. If it proves to have a tendency to occupy other

than waste land it should be eradicated at the first opportunity.

Specimens of all species discussed herein are deposited in the Tracy Herbarium at the Agricultural and Mechanical College of Texas, and at Gray Herbarium, Harvard University.

Texas Agricultural Experiment Station,
Agricultural and Mechanical College of Texas,
College Station, August 30, 1939.

REVIEW

Liverworts of southern Michigan. By WILLIAM C. STEERE. Cranbrook Institute of Science, Bulletin no. 17. Pp. 1-97, pls. I-XXII and frontispiece. Bloomfield Hills, Michigan. 1940. Waterproof cloth, \$1.00; paper, \$0.50.

Dr. Steere has written this book for beginners. There are eight or nine pages devoted to the structure and reproduction of liverworts, where they grow, how to gather and preserve them, how to identify them. The language is simple so that anyone with little knowledge of botany may understand. A glossary of three dozen necessary scientific terms used in describing the plants aids in simplification. There is a key to the genera and species which occur in southern Michigan; also short descriptions of genera and species. Most useful of all, perhaps, are twenty-three pages of photographs and drawings.

The book will be of great help to anyone beginning the identification of liverworts, whether of Michigan or not, especially on account of the excellent illustrations.—T. C. FRYE, Department of Botany, University of Washington, Seattle.

NOTES AND NEWS

NUTLETS OF *AM SINCKIA INTERMEDIA* TOXIC TO SWINE, HORSES AND CATTLE. (Scientific paper No. 428, Agricultural Experiment Station, State College of Washington). The toxicity of the nutlets of *Amsinckia intermedia* Fisch. & Mey. is attested by the fact that nine pigs, three horses and one of three calves, fed wheat screenings containing them, developed hepatic cirrhosis. The parenchymal cells of the liver were destroyed and replaced by connective tissue. In swine and cattle the condition is locally known as "hard liver" disease. In horses, it is known as "walking disease" because of the tendency of horses with hepatic cirrhosis to wander aimlessly. Only in certain semi-arid regions of Washington, Oregon and Idaho, where *Amsinckia intermedia* grows abundantly in the grain fields, has the condition been recognized clinically. In certain limited regions the raising of swine and horses has been almost abandoned. It is probable that sublethal poisoning may be much more widespread, occurring in those areas where the species is only moderately abundant. Because of its irritant nature, animals do not graze the plant but readily eat the seed which is harvested with the grain and which has a